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ABSTRACT

This paper provides a general description of the Consumer Price Index, giving special attention to the applicability and reliability of this survey data for revising or refining the current poverty measure. The Consumer Price Index (CPI), published monthly by the Bureau of Labor Statistics, is a statistical measure of the average change in prices of goods and services purchased by urban wage and clerical workers. The first section of this technical paper describes the construction of the current index, which is based on revisions introduced in January of 1964. A description of another set of revisions implemented in the Spring of 1977 is reviewed in the second section. The empirical evidence relating to the sensitivity of a price index to the expenditure patterns of groups of consumers other than urban wage and clerical workers, in particular low income consumers, is reviewed in the next section. The final section of this paper considers the advantages and disadvantages of developing a price index specifically targeted to the poor. The conclusion reached is that at this point the high cost of the construction of a price index for the poor outweighs its apparent usefulness, and a recommendation for a price index for the poor cannot be made. (Author/AM)

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THE MEASURE OF POVERTY

Technical Paper V

The Consumer Price Index

BEST COPY AVAILABLE

By: Jill King
Mathematica, Inc.

UDO 16920

U.S. Department of Health, Education, and Welfare

U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
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WASHINGTON, D.C. 20201

October 28, 1976

Virginia Trotter
Assistant Secretary for Education
Department of Health, Education,
and Welfare

William A. Morrill
Assistant Secretary for Planning
and Evaluation
Department of Health, Education,
and Welfare

I am pleased to forward Technical Paper V, "The Consumer Price Index". It contains supporting data for the report entitled The Measure of Poverty which was prepared in compliance with section 823 of the Education Amendments of 1974. This paper was produced with the assistance of Mathematica Inc., based on an outline and published government material provided by the Poverty Studies Task Force. It does not present the views of the Task Force as a whole or of individual members. Rather, it provides a general description of the Consumer Price Index with special attention to the applicability and reliability of the survey data for revising or refining the current poverty measure.

Bette Mahoney

Bette Mahoney, Chairman
Poverty Studies Task Force

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PREFACE

Section 823 of the Education Amendments of 1974 (PL 93-380) requires a thorough study of the manner in which the relative measure of poverty for use in the financial assistance program, authorized by Title I of the Elementary and Secondary Education Act of 1965, may be more accurately and currently developed.

That financial assistance program is administered by the Commissioner of Education, through the Office of Education, Department of Health, Education, and Welfare. An important feature is the use of a formula prescribed by Section 103 of the Elementary and Secondary Education Act for the annual distribution of Federal funds to school districts. A significant factor in the formula is the number of school-age children 5 to 17 in poor families within each school district. The measure of poverty which is used, and which is the subject of the study mandated by Section 823, is the Federal government's official statistical definition of poverty (also known as the Orshansky, OMB, Census Bureau, or Social Security poverty lines).

Other work related to poverty measurement has been called for in recent legislative acts. In the Comprehensive Employment and Training Act, the Secretary of Labor is directed to develop and maintain comprehensive household budget data at different levels of living, including a "level of adequacy." Any such review of the level of adequacy must necessarily be closely related to measures of poverty. The Housing and Community Development Act of 1974 gives the Secretary of HUD authority to adjust the poverty measure to reflect local variations in the cost of living. The Conference Report accompanying it directs the Secretary to develop or obtain data with respect to the "extent of poverty" by metropolitan areas and to submit such data to the Congress as part of a March 31, 1977, report.

Because of the broad scope of the subject matter, coverage of the study of the measure of poverty mandated by Section 823 of the Education Amendments of 1974 was extended to include implications of the study findings for the poverty-related programs of all affected Federal departments and agencies. The Title I program of the Elementary and Secondary Education Act was given the most detailed treatment, to meet the legislatively-mandated specifications for the study as well as to serve as a primary example of application of the concepts of poverty measurement to Federal programs. The findings of the study are published in a report entitled, "The Measure of Poverty." An important objective of the study was full discussion and documentation of the major elements of currently applied and potentially usable poverty measures. Material containing essential supporting documentation for the study was assembled as technical papers. These have been written to stand alone as complete technical treatments of specific subjects.

The study was performed under the direct guidance of a Poverty Studies Task Force of the Subcommittee on the Education of the Disadvantaged and Minorities, Federal Inter-Agency Committee on Education. Technical papers were prepared at the request of, under the direction of, and subject to review by the Task Force members. Some papers are primarily the work of one or two persons; these are attributed to their authors. Others result from the collective input of Task Force members or advisors and no specific attribution is given except to the Task Force, as a whole.

The following listings show members of the Poverty Studies Task Force by appropriate Federal departments and agencies, and the titles and authors of the technical papers.

This report contains Technical Paper V, The Consumer Price Index. It was produced with the assistance of Jill King, Mathematica Inc.

To obtain copies of the report, "The Measure of Poverty," or any of the technical papers, please write to:

Office of the Assistant Secretary for Planning and Evaluation
Department of Health, Education, and Welfare
200 Independence Avenue, S.W.
Room 443D - South Portal Building
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Federal Interagency Committee on Education
Subcommittee on Education for the Disadvantaged and Minorities

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TECHNICAL PAPERS

I.	Documentation of Background Information and Rationale for Current Poverty Matrix	Mollie Orshansky Social Security Administration
II.	Administrative and Legislative Usages of the Terms "Poverty," "Low Income," and Other Related Terms	Poverty Studies Task Force with assistance from Ellen Kraus
III.	A Review of the Definition and Measurement of Poverty	Urban Systems Research and Engineering, Inc.
IV.	Bureau of Labor Statistics Family Budgets Program	Mark Sherwood Bureau of Labor Statistics
V.	The Consumer Price Index	Jill King Mathematica, Inc.
VI.	Wealth and the Accounting Period in the Measurement of Means	Nelson McClung and Eugene Steuerle Department of the Treasury
VII.	In-Kind Income and the Measurement of Poverty	Janice Peskin Health, Education, and Welfare
VIII.	The 1972-73 Consumer Expenditure Survey	Jill King Mathematica, Inc.
IX.	Inventory of Federal Data Bases Related to the Measurement of Poverty (A) Non-Census Data Bases (B) Census Data Bases	Connie Citro, Mathematica, Inc. Bureau of the Census
X.	Effect of Using a Poverty Definition Based on Household Income	Jack McNeil, Doug Sater, Arno Winard Bureau of the Census
XI.	Update of the Orshansky Index	Mollie Orshansky Social Security Administration
XII.	Food Plans for Poverty Measurement	Betty Peterkin Department of Agriculture
XIII.	Relative Poverty	Jack McNeil Bureau of the Census
XIV.	Relative Measure of Poverty	Stanley Stephenson Health, Education, and Welfare
XV.	Analytic Support for Cost-of-Living Differentials in the Poverty Thresholds	Thomas Carlin Department of Agriculture
XVI.	Implications of Alternative Measures of Poverty on Title I of the Elementary and Secondary Education Act	Abdul Khan and Herman Miller Health, Education, and Welfare
XVII.	The Sensitivity of the Incidence of Poverty to Different Measures of Income: School-age Children and Families	Survey Research Center University of Michigan
XVIII.	Characteristics of Low-Income Populations Under Alternative Poverty Definitions	Lawrence Brown Health, Education, and Welfare

INTRODUCTION

An important aspect of any poverty measure is how it will be updated each year to reflect overall changes in the cost of living. An independent rederivation of the poverty thresholds each year is impractical, if not impossible, as the consumption surveys on which they are based are conducted only about every 10 years and the food requirements are recomputed only periodically. Therefore, given the needs standards developed, a means of taking account of changing prices is necessary. Originally the Social Security Administration revised the Orshansky poverty measure by the annual increment in the economy food budget. In 1969, the Consumer Price Index was adopted for the annual adjustment.

The Consumer Price Index (CPI), published monthly by the Bureau of Labor Statistics, is a statistical measure of the average change in prices of goods and services purchased by urban wage and clerical workers. It is widely used as a measure of the change in the purchasing power of the consumer's dollar, as an indicator of inflation, and as an escaltor for wages and pensions. This series is part of an ongoing program by the Bureau of Labor Statistics since the early 20th century. Although over the years there have been many changes in scope, coverage, frequency, and publication format, the index has remained a measure of change in the cost of a fixed market basket of goods and services. The first section of this technical paper describes the construction of the current series, which is based on revisions introduced in January 1964. BLS is currently undertaking a set of revisions, which will be implemented in the spring of 1977. A description of this revision is contained in the second section.

An important issue which has been raised is whether the CPI is an appropriate yardstick by which to update the poverty threshold. The empirical evidence relating to the sensitivity of a price index to the expenditure patterns of groups of consumers other than urban wage and clerical workers, in particular low-income consumers, is reviewed in the next section. The final section of this technical paper considers the advantages and disadvantages of developing a price index specifically targeted to the poor.

THE CONSUMER PRICE INDEX

The Consumer Price Index is a weighted aggregative index number with "fixed" weights representing annual consumption patterns of urban wage earners and clerical workers in a base period. It is often referred to as a "market basket" index. Thus, in the CPI the procedure is to reprice at regular time intervals and compare the aggregate cost of the goods and services priced in the current period with the cost of the same market basket in a selected base period. The content of this market basket in terms of items, quantities, and qualities is kept essentially unchanged in the index calculation between major revisions. The last major revision took place in January 1964 and the annual consumption patterns represented in the index since that date were determined in a Survey of Consumer Expenditures in 66 Standard Metropolitan Statistical Areas (SMSA's) and smaller urban areas generally covering the period 1960-61. Since the

implicit quantities remain constant, comparisons of the total cost of the market basket (price x quantity) from period to period yield the measure of average price change.

The choice of a standard reference base, or a base period from which subsequent price change is measured, is arbitrary and could be changed by dividing the series by the value of the index in a new period selected as the base. The base period of the current CPI (as well as most other Federal general purpose statistical series) is 1967; the annual average CPI in 1967, therefore, is 100. In May 1975, the CPI was 159.3, and in June 1975, it was 160.6. This means that the same combinations of goods and services purchased by the index population in 1960-61 which cost $100 in 1967, cost on the average $159.30 in May 1975 and $160.00 in June.

The formula used for the calculation of the CPI can be represented as

$$CPI_1 = \frac{\sum_i p_{1i} q_{oi}}{\sum_i p_{oi} q_{oi}} \times 100$$

where p_{oi} and q_{oi} are the prices and quantities in the base period and p_{1i} are the prices for those same commodities in a subsequent period. This is known as a Laspeyre price index, because constant base period weights are used. 2/ Thus, there are two components to the calculation of the CPI, the determination of the composition of the market basket and the subsequent regular pricing of the individual items.

The CPI Market Basket

The market basket of quantities represents all the goods and services purchased: food, clothing, shelter, transportation, fuel, drugs, dentist and doctor fees, recreation, furniture, applicances, and haircuts. Not only necessities are included; "luxuries" such as alcoholic beverages, bowling fees, and vacations are represented in the market basket. All taxes directly associated with the purchase and continued possession of items bought by the index population are included in the scope of the CPI. Thus, excise, sales, and real property taxes are included, while personal taxes such as income and social insurance taxes, which are not directly associated with the purchase and continued possession of specific goods and services, are not included. For the current CPI, the composition of the market basket was determined on the basis of the expenditure patterns reported in the Survey of Consumer Expenditures conducted in 1960-61.

The 1960-61 Survey of Consumer Expenditures was a comprehensive survey of the income, expenditure, and savings behavior of American families. The approximately 14,000 families interviewed were asked to recall their expenditures for items such as automobiles, appliances, clothing, and entertainment over the previous year and for food and other small items such as cleaning supplies for the previous week. Detailed socioeconomic information was collected about the consumer unit, in addition to an inventory of major

durable goods, property, and financial assets and liabilities. For the purpose of developing the CPI market basket, only the responses of urban consumer units with at least one wage earner or clerical worker were used; the total sample included 4,860 such families, with an average income of $5,963 in 1960-61.

The expenditure information collected in this survey was extremely detailed. Over 1,800 different items were recorded. Since it would be impossible to price each of these items individually, a sample of about 400 items was selected to comprise the market basket. Pricing of these items thus represents the price movements of all items. After classifying the detailed items into 52 broad expenditure classes representing groupings of items which serve similar human needs, individual items were selected at random with a probability inversely proportional to their importance in the budget. Table 1 indicates the 52 expenditure classes and their relative importance in the CPI market basket. The 400 items selected with this stratified random probability process (some selected with certainty) are very specific items, for example, canned Bartlett pears, skinless frankfurters, frozen lemonade concentrate, cleansing tissues, furnace air filters, and home permanent refills. Table 2 illustrates the detailed items selected to represent some of the expenditure classes. Even greater detail is specified to the BLS price reporters, such as the size of the container to be priced or the options included on the particular automobile.

The CPI Pricing Program

Prices for the CPI are obtained in 56 urban areas: the 12 largest SMSA's, 27 other SMSA's, and 17 additional urban places. These areas were selected on the basis of the 1960 Census of Population to be representative of the U.S. urban population. Pricing is accomplished primarily by personal visit to a representative sample of nearly 18,000 stores and service establishments, including chain stores, independent grocery stores, department and specialty stores, and repair and service shops, located in the central cities and suburban areas in these 56 urban areas. Also included were bowling alleys, movie theaters, restaurants, physicians, barber shops, and beauty parlors. Where possible, these outlets were chosen to be representative on the basis of their sales volume.

Prices are collected in each of the 56 urban locations at intervals ranging from once every month to once every three months, with a few items surveyed semi-annually or annually. Because food prices change frequently, and because foods are a significant part of total spending, food pricing is conducted every month in each urban area. Except for food and gasoline items, the number of price quotations obtained in each city is usually quite small: basically 4, and a maximum of 30. The number of food stores visited ranges from 10 to a maximum of 80, the latter in New York City. At the national level, however, this represents a significant number of quotations.

To ensure that the index reflects only changes in prices and not changes due to quantity or quality differences, the BLS price reporters are provided with detailed specifications for each item to be priced. Initially,

Table 1. Relative Importance of Major Expenditure Classes in the Consumer Price Index, December 1963

Expenditure Class Number	Components	Percent of Expenditure on all Items December, 1963
	All Items	100.0%
	Food:	22.43
	Food at home:	17.89
	Cereals and bakery products:	2.45
EC-1	Cereals and grain products	.80
EC-2	Bakery products	1.65
	Meats, poultry and fish:	5.63
EC-3	Meats:	4.45
3A	Beef and veal	2.23
3B	Pork	1.20
3C	Other meats	.94
EC-4	Poultry	.73
EC-5	Fish	.45
EC-6	Dairy products	2.80
	Fruits and vegetables:	3.02
EC-7	Fresh fruits	.76
EC-8	Fresh vegetables	.94
EC-9	Processed fruits and vegetables	1.32
	Other food at home:	3.99
EC-10	Eggs	.64
EC-11	Fats and oils	.55
EC-12	Sugar and sweets	.64
EC-13	Nonalcoholic beverages	1.01
EC-14	Prepared and partially prepared foods	1.15
EC-15	Food away from home	4.54
	Housing:	33.23
	Shelter:	20.15
EC-16	Rent	5.50
	Homeownership:	14.27
EC-17	Home purchase and financing	9.11
EC-18	Taxes and Insurance	2.13
	Maintenance and repairs:	3.03
EC-19	Commodities	.98
EC-20	Services	2.05
EC-21	Fuel and utilities	5.26
	Household furnishings and operation:	7.82
EC-22	Textile housefurnishings	.61
EC-23	Furniture	1.44
EC-24	Floor coverings	.48
EC-25	Appliances	1.36
EC-26	Other housefurnishings	.83
EC-27	Housekeeping supplies	1.55
EC-28	Housekeeping services	1.55
	Apparel and upkeep:	10.63
	Men's and boys' apparel:	2.86
EC-29	Men's apparel	2.21
EC-30	Boys' apparel	.65
	Women's and girls' apparel:	4.08
EC-31	Women's apparel	3.23
EC-32	Girls' apparel	.85
EC-33	Footwear	1.51
	Other apparel:	2.18
EC-34	Commodities	.71
EC-35	Services	1.49
	Transportation:	13.88
	Private:	12.64
EC-36	Auto purchase	5.02
EC-37	Gasoline and motor oil	3.28
EC-38	Auto parts	.72
	Automobile services:	3.62
EC-39	Auto repairs and maintenance	.98
EC-40	Other automobile expenses	2.64
EC-41	Public transportation	1.24
	Health and recreation:	19.45
	Medical care:	5.70
EC-42	Drugs and prescriptions	1.14
EC-43	Professional services	2.59
EC-44	Hospital services & health insurance	1.97
	Personal care:	2.75
EC-45	Toilet goods	1.52
EC-46	Personal care service	1.23
	Reading and recreation:	5.94
	Recreation:	4.36
EC-47	Recreational goods	2.78
EC-48	Recreational services	1.58
EC-49	Reading and education	1.58
	Other goods and services:	5.06
EC-50	Tobacco products	1.89
EC-51	Alcoholic beverages	2.64
EC-52	Financial and miscellaneous personal expenses	.53

SOURCE: U.S. Department of Labor, Bureau of Labor Statistics, Handbook of Methods, Chapter 10, "Consumer Prices," BLS Bulletin 1711 (rev. 1972 and 1974) table 2 and 3.

Table 2. List of Items Included in Market Basket of Consumer Price Index for Selected Expenditure Classes

Groups, subgroups, expenditure classes		Priced items	
		Sample A	Sample B
	Housing—Continued		
EC-21	Fuel and utilities	Fuel oil and coal:	
		Fuel oil, #2	Fuel oil, #2.
		Coal, anthracite or bituminous	Coal, anthracite or bituminous.
		Gas and electricity:	
		Gas, 3 bills per city	Gas, 3 bills per city.
		Electricity, 3 bills per city	Electricity, 3 bills per city.
		Other utilities:	
		Residential telephone services	Residential telephone services.
		Residential water and sewerage services	Residential water and sewerage services.
	Household furnishings and operation:		
EC-22	Textile housefurnishings	Pillows, bed, polyester or acrylic filling	Sheets, percale or muslin.
		Curtains, tailored, polyester marquisette	Bedspreads, chiefly cotton, tufted.
		Drapery fabric, cotton or rayon/acetate	Slipcovers, ready-made, chiefly cotton.
EC-23	Furniture	Bedroom suites, good or inexpensive quality	Bedroom suites, good or inexpensive quality.
		Living room suites, good and inexpensive quality	Living room suites, good and inexpensive quality.
		Lounge chairs, upholstered	Dining room suites.
		Sofas, dual purpose	Sofas, standard, upholstered.
		Sleep sets, Hollywood bed type	Box springs.
		Aluminum folding chairs	Cribs.
EC-24	Floor coverings	Rugs, soft surface:	Rugs, soft surface:
		Broadloom, wool	Broadloom, wool.
		Broadloom, nylon	Broadloom, nylon.
		Rugs, hard surface	Tile, vinyl.
EC-25	Appliances	Refrigerators or refrigerator-freezers, electric	Refrigerators or refrigerator-freezers, electric.
		Washing machines, electric, automatic	Washing machines, electric, automatic.
		Ranges, free standing, gas or electric	Vacuum cleaners, canister type.
		Clothes dryers, electric, automatic	Air conditioners, demountable.
		Room heaters, electric, portable	Garbage disposal units.
EC-26	Other housefurnishings	Dinnerware, earthenware	Flatware, stainless steel.
		Carpet sweepers, manually operated	Table lamps, with shade.
		Venetian blinds, white, steel or aluminum slats	Lawn mowers, power, rotary type.
		Electric drills, hand held	Nails, 8d (penny) common.
EC-27	Housekeeping supplies	Detergent, liquid, laundry	Detergent, granules or powder.
		Laundry soap for fine fabrics	Air deodorizers, spray type.
		Scouring pads, steel wool	Paper napkins, embossed.
		Toilet tissue	Stationery, envelopes.
EC-28	Housekeeping services	Domestic service, general housework	Domestic service, general housework.
		Baby sitter service	Baby sitter service.
		Postal services	Postal services.
		Laundry flatwork, finished service	Laundry flatwork, finished service.
		Licensed day care service, preschool child	Reupholstering furniture.
		Washing machine repairs	Moving expenses.
	Apparel and upkeep:		
	Men's and boys' apparel:		
EC-29	Men's apparel	Suits, year round weight, 2 qualities	Suits, year round weight, 2 qualities.
		Topcoats, wool	Jackets, lightweight.
		Suits, tropical weight	Trousers, work, cotton.
		Slacks, wool or wool blend	Slacks, cotton or manmade blend.
		Shirts, work, cotton	Shirts, business, cotton.
		Shirts, sport, cotton, short sleeves	Socks, cotton.
		Shirts, sport, cotton, long sleeves	Handkerchiefs, cotton.
		T-shirt	
EC-30	Boys' apparel	Coats, all purpose, cotton or cotton blend	Sport coats, wool or wool blend.
		Dungarees, cotton or cotton blend	Undershorts, cotton.
	Women's and girls' apparel:		
EC-31	Women's apparel	Coats, heavyweight, wool or wool blend, 2 qualities.	Coats, heavyweight, wool or wool blend, 2 qualities
			Coats, lightweight, topper.
		Carcoats, heavyweight, cotton	Sweaters, wool or acrylic.
		Skirts, wool or wool blend	Dresses, cocktail, street length.
		Skirts, cotton or cotton blend	Dresses, street, chiefly manmade fiber, 2 qualities.
		Dresses, street, chiefly manmade fiber, 2 qualities	Dresses, street, wool or wool blend.
		Dresses, street, wool or wool blend	Dresses, street, cotton.
		Dresses, street, cotton	Blouses, cotton.
		Housedresses, cotton	Bathing suits, one piece.
		Slacks, lightweight, cotton and carded cotton	
		Slips, nylon	Girdles, manmade blend.
		Brassieres, cotton	Panties, acetate.
		Hose, nylon, full fashioned and seamless, 2 styles	Hose, nylon, full fashioned and seamless, 2 styles.
		Anklets, cotton	Gloves, fabric, nylon or cotton.
		Handbags, rayon faille or plastic	
EC-32	Girls' apparel	Raincoats, vinyl plastic or chiefly cotton	Coats, lightweight, topper.
		Skirts, wool or wool blend	Slacks, cotton.
		Slips, cotton blend	Shorts, cotton.
		Handbags, plastic	Dresses, cotton.
			Robes, duster style, quilted tricot, or percale.
EC-33	Footwear	Men's:	
		Shoes, street, oxford, 2 qualities	Shoes, street oxford, 2 qualities.
			Shoes, work, high.
		Women's:	
		Shoes, street, pump, 2 styles	Shoes, street, pump, 2 styles.
		Shoes, evening, pump	Shoes, evening, pump.
		Shoes, casual, pump	
		Houseslippers, scuff	
		Children's:	
		Sneakers, boys', oxford type	Shoes, oxford.
			Dress shoes, girls', strap.
	Other apparel:		
EC-34	Commodities	Diapers, cotton gauze	Wrist watches, men's, imported movement.
		Yard goods, cotton	Wrist watches, women's, imported movement
		Earrings, Pearl, simulated or imitation	Zipper, skirt or neck placket.
EC-35	Services	Dry cleaning, men's suits and women's dresses	Dry cleaning, men's suits and women's dresses.
		Shoe repairs, women's heel lift	Automatic laundry service.
		Laundry, men's shirts	Tailoring charges, hem adjustment.

SOURCE: U.S. Department of Labor, Bureau of Labor Statistics, Handbook of Methods, Chapter 10, "Consumer Prices," BLS Bulletin 1711 (rev. 1972 and 1974), p. 86.

some individual discretion in the selection of the precise items was permitted because of local variations. However, once selected, the reporters were instructed to price exactly the same item in the same stores each time. When it is necessary to substitute an alternative, the price of that item is carefully spliced into the index in order not to affect the overall index.

Rental rates are obtained in a special survey of about 400 tenants. On a quarterly rotation basis, these units are reinterviewed every six months. Included in the survey is a detailed determination of such items as telephone, furniture, maid service, gas and electricity, water, garbage, and so on. Thus, six-month rent changes are obtained.

Some prices are not collected by personal interview. BLS uses mail questionnaires to obtain data on streetcar and bus fares, newspaper prices, and prices of certain other standard items which do not require a personal visit. For a number of items, such as home purchase, college tuition, and magazine subscriptions, data collected by other Government agencies or private organizations are used.

Publication and Coverage

The monthly CPI is published regularly by the Bureau of Labor Statistics, first in a press release near the end of the month following that to which the data refer. Several weeks later, a report containing additional tables and analytical text is published. These data relate to major group and subgroup price indices, at the national urban level and for 25 selected large metropolitan areas.

The Consumer Price Index is also published monthly in the Monthly Labor Review with a two-month lag. In addition to the major expenditure group and subgroup price indices, monthly price indices for each of 400 specific items included in the CPI market basket are reported at the national urban level. Several levels of geographic detail are also provided for the CPI. Monthly price indexes for "all items" are reported for the 5 largest urban areas (namely, the Chicago-Northwestern Indiana Standard Consolidated Area (SCA), the Detroit SMSA, the Los Angeles-Long Beach SMSA, the New York-Northeastern New Jersey SCA, and the Philadelphia SMSA). Quarterly price indexes for "all items", major groups, and subgroups, and monthly price indexes for food categories and gasoline are reported separately for 23 SMSA's. These SMSA's are listed in Table 3. Quarterly price indices for all items and for each of the major groups are also published separately for the four broad geographic regions and for five population-size class areas: 3.5 million or more; 1.4-3.5 million; 250,000-1.4 million; 50,000-250,000; and 2,500-50,000. As discussed more fully later in the paper, these area and regional price indices provide only a measure of time-to-time price changes in each place; they cannot be used as indicators of place-to-place differences in the cost of living. Historical time series of these data are available in the Handbook of Labor Statistics published annually by the Bureau of Labor Statistics.

Table 3. List of Cities for which Quarterly Consumer Price Index and Quarterly Food Price Index Are Published Separately

Atlanta, Georgia	Milwaukee, Wisconsin
Baltimore, Maryland	Minneapolis-St. Paul, Minnesota
Boston, Massachusetts	New York-Northeastern New Jersey
Buffalo, New York	Philadelphia, Pennsylvania
Chicago-Northwestern Indiana	Pittsburgh, Pennsylvania
Cincinnati, Ohio-Kentucky	Portland, Oregon
Cleveland, Ohio	St. Louis, Missouri
Dallas, Texas	San Diego, California
Detroit, Michigan	San Francisco-Oakland, California
Honolulu, Hawaii	Scranton, Pennsylvania
Houston, Texas	Seattle, Washington
Kansas City, Missouri	Washington, D.C.
Los Angeles-Long Beach, California	

NOTE: Portland, Oregon and Scranton, Pennsylvania were added in 1974.

Other monthly reports contain the actual average prices of selected foods and fuels in the largest metropolitan areas. For each of the food items priced for the CPI, the average monthly price in each of 24 SMSA's is reported in Estimated Retail Food Prices by City. The 24 SMSA's are the same as those listed in Table 3, with the exception that Anchorage, Alaska, is included and Portland and Scranton are omitted. Food prices for somewhat different items are also reported for Guam and the Virgin Islands. Retail Prices and Indexes of Fuels and Utilities reports besides indexes, the monthly electricity bill for specified levels of usage (100 Kwh, 250 Kwh, and 500 Kwh), the monthly gas bill for uses other than heating at 3 levels of usage (10 therms, 25 therms, and 40 therms), together with the average price per gallon of regular gasoline and of premium gasoline in each of the basic 23 SMSA's (i.e., excluding Portland and Scranton). In addition, this publication reports the residential heating rates for 100 therms of gas for 20 SMSA's and the average price for 100 gallons of fuel oil #2 for 12 SMSA's.

Uses of the Consumer Price Index

One of the most important uses of the Consumer Price Index is as a general indicator of inflation in the U.S. economy. Consequently, it has considerable impact on the formulation and evaluation of broad economic policy. Adjustments to aggregate monetary and fiscal policies are made partially on the basis of movements in the CPI. In this role as the chief measure of inflation the CPI is also widely used as a deflator to constant dollars of many statistical series, such as the national accounts, earnings, and output, in order to permit analysis of the underlying real trends in the economy.

As a measure of the changes in the purchasing power of the consumer dollar, the CPI is used extensively as an escalator in wage agreements and private and Federal pensions. "It is estimated that there are more than 5.1 million workers covered by collective bargaining contracts which provide for increases in wage rates when the CPI rises." 3/ In addition, Social Security benefits are tied to the annual rise in the CPI; food stamp benefits are adjusted semi-annually by the rise in the food-at-home component as reflected in the Thrifty Food Plan; and school lunch and breakfast reimbursements provided under USDA programs are adjusted semi-annually by the rise in the food-away-from-home component. Finally, as already mentioned, the current estimates of the poverty thresholds, the official Federal measure, are updated each year by the annual rise in the Consumer Price Index. Similar thresholds, used as eligibility criteria in many health and welfare programs of both Federal and state and local governments, are also updated periodically with the CPI. One of the major examples is the income eligibility guidelines developed by the Community Services Administration.

The Consumer Price Index thus has a comprehensive effect on the lives of Americans. Through its widespread use as an escalator, "when dependents are taken into account, the incomes of somewhere in the neighborhood of one-half the population already are or soon will be pegged to the Consumer Price Index." 4/ Virtually everyone is affected by its direct impact on aggregate economic policies.

Limitations of the Index

As with any statistical series, the CPI is subject to a number of limitations. Sampling and reporting errors, of course, are present; these would be avoidable only at prohibitive cost. The current CPI program, for the first time in the history of the index, provides estimates of the sampling error, and hence the reliability of the index. More serious are some of the other limitations in the CPI.

The Consumer Price Index is a price index; it is not an index of the cost of living, although many persons use the CPI as if it were. The CPI represents the average movement of prices for a fixed market basket of goods and services. It does not, however, necessarily represent the change in the actual costs of day-to-day living. As prices rise, families adjust their consumption patterns, substituting less costly items or performing services such as home repairs themselves. Over time incomes rise, causing a shift in expenditure patterns more heavily weighted to nonessential items. The change in relative prices, as some prices rise faster than others, also causes a change in purchases. Because the market basket remains unchanged, these shifts in consumption patterns are not captured by the CPI. A true cost-of-living index would measure the average cost of market baskets that provide equivalent levels of consumer satisfaction; thus, the composition of that market basket would change over time.

Related to this limitation is the drawback that the CPI does not capture quality improvements in existing products or the introduction of new products. The BLS price reporters are instructed to price precisely the same items each

month, to the extent possible. Frequently changes in prices are accompanied by changes in the quality of the particular items, and price adjustments are made to allow for the quality change, where possible. Consequently, the market basket becomes less and less representative of those products families are actually consuming. Although BLS does make a limited attempt to phase out obsolete items and replace them with improved versions by the splicing technique mentioned, a revision of the market basket is a major undertaking and is possible only with a new survey of consumer expenditures.

The CPI represents the average movement of prices for urban wage and clerical workers. Since it is an average index, including, for example, both homeowners and renters and both car owners and carless families, it does not represent the change in prices faced by any particular family. The price changes of a family will depend on many factors, such as their own needs and tastes and changes in their family composition. Thus, use of the CPI as a general escalator will overcompensate some families and undercompensate other families for the true changes experienced. Moreover, since the CPI relates to urban wage and clerical workers, in a strict sense the index is not directly applicable to other population groups, such as nonurban workers, professional workers, or the retired.

Although the CPI is published for 25 SMSA's and four geographic regions, it cannot be used to measure interarea differences in either prices or living costs. The subnational indices show only differences in the rate of price change from one time period to another in each area. For example, in 1974 the average CPI for Baltimore was 152.4 and for Pittsburgh, 147.3. These indices may be interpreted as indicating a faster rate of average price increases since 1967 in Baltimore than in Pittsburgh, 52.4 percent compared to 47.3 percent. However, it is not possible to conclude that prices (or the cost of living) were 3.5 percent higher in Baltimore than in Pittsburgh (152.4/147.3). The reason for this limited interpretation of the area indices is that the market basket was separately derived for each area. Therefore, the fixed weights in the market basket differ from area to area. Because the market basket is not identical in each area, the area price indices do not measure the same thing and cannot be used to make interarea price comparisons. On the other hand, while the market baskets do reflect differing expenditure patterns, it cannot be shown that they represent equivalent levels of satisfaction in all areas. Therefore, the area indices cannot be used to make interarea comparisons of the cost of living.

THE 1977 CPI REVISION

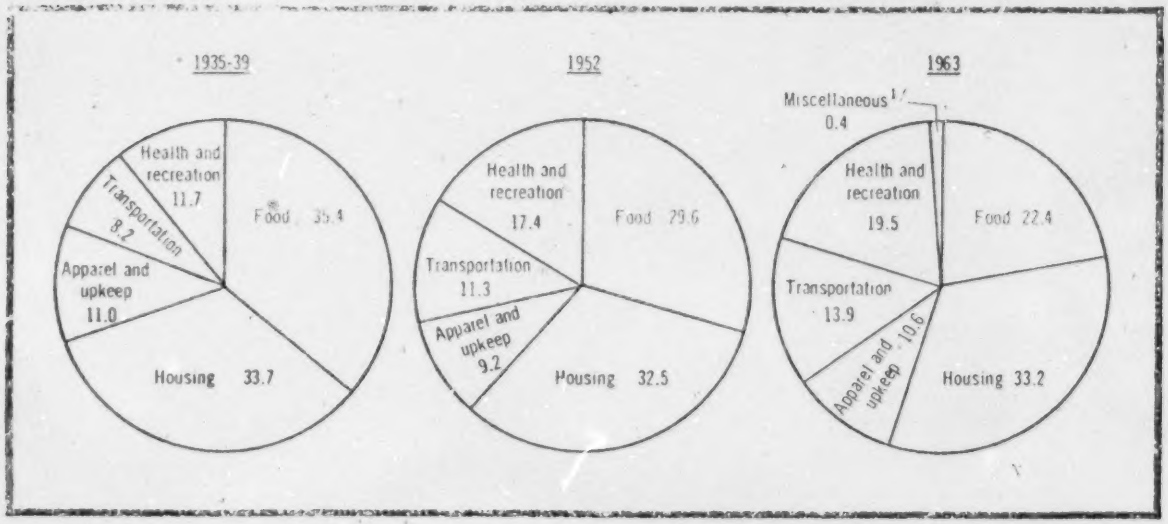
The Bureau of Labor Statistics is currently revising and updating the Consumer Price Index. The revised index, scheduled to be published in April 1977, will be the result of eight years of effort. The first revision in the CPI since 1963, it will expand the coverage of items and areas, incorporate a revised market basket based on more recent expenditure data, reflect geographic shifts in the population since 1960, and increase the frequency of many price quotations. The introduction of these improvements will reduce the sampling and measurement error of the CPI. In addition, a second index covering a much broader segment of the population, all urban

households, will be developed and published for the first time. These changes are described in further detail in this section.

Revised Market Basket

As described in the preceding section, the market basket of the current CPI is based on the 1960-61 Survey of Consumer Expenditures. These expenditure patterns are now 15 years out of date and do not reflect changes in real income over the period, the introduction of new products, or the improvement of old products. Figure 1 illustrates the changes that have occurred in the market basket at the broad level over a 30-year period (1935-1963). Food, for example, dropped from 35.4 percent to 22.4 percent of expenditures, while health and recreation rose from 11.7 to 19.5 percent. Housing remained a relatively constant 33 percent.

A major part of the revision program, therefore, was the establishment of a more current and relevant market basket for the CPI. The basis for this revision was the 1972-73 Consumer Expenditure Survey (CEX), designed to provide more up-to-date information on the expenditures of American families. This survey has been described in Technical Paper VIII and will be only briefly summarized here. Conducted over the period January 1972-June 1974, the CEX was actually comprised of two separate but related surveys, a quarterly survey and a diary survey. In the quarterly survey, approximately 20,000 families were interviewed five times over a 15-month interval; in the diary survey, another 20,000 families were asked to complete a detailed diary of



1/ Includes personal finance charges other than automobile financing and mortgage interest. Imputed, not directly priced.

SOURCE: Julius Shiskin, "Updating the Consumer Price Index - An Overview," Monthly Labor Review (July 1974), p. 8.

Figure 1. The Consumer Market Basket, Selected Periods

all expenditures during a two-week period. The reason for the two surveys was to improve the accuracy of the expenditure data collected by tailoring the survey to the ease of recall of different items. Thus, the quarterly survey was designed to collect information on larger and more easily recalled expenditures, while expenditures on smaller and relatively inexpensive items were collected with daily recordkeeping in the diary survey. In total, the quarterly survey covered 60 to 70 percent of average total family expenditures, including items such as furniture, kitchen appliances, doctors' bills, insurance, and out-of-town trips. The major expenditure components for which the diary survey was designed, food, household supplies, personal care products, and non-prescription drugs, amounted to about 30 to 40 percent of family expenditures. Considerable detail about each purchase was recorded; over 1,800 separate items were identified.

Once the complete expenditure pattern has been developed, the market basket of items will be selected with stratified random sampling in a manner similar to that described in the preceding section for the current market basket. However, instead of selecting 400 precisely specified items to represent all goods and services purchased, somewhat fewer items specified in less detail will be chosen. As a result the new market basket will be comprised of at least 250 expenditure categories such as fresh whole milk, eggs, and butter. "Store specific pricing" will then be used to select the detailed items to be priced, such as Vitamin D, Grade A Homogenized milk in half-gallon containers (the level of detail currently specified in the CPI market basket). In this improved process, the specific items are chosen separately in each outlet surveyed through a disaggregation probability process based on sales receipts. Thus, although in the aggregate, high-volume items will be chosen most often, low-volume items will also be represented in proportion to their share of total expenditures. Consequently, the published CPI components should be more representative of the range of typical items purchased.

Expanded Coverage

Expanded coverage of both geographic areas and of population will be included in the revision program. For the revised CPI, prices will be collected in 85 urban areas, compared to the current 56. These areas were selected on the basis of the 1970 Census, and thus will more accurately represent the geographic distribution of the population which has shifted since the 1960 Census which formed the basis for the 56-area selection. Of the 85 areas, 28 are self-representing and 57 represent the balance of the SMSA's and the remainder of the urban population. This increase in geographic coverage will improve the reliability of the national CPI and the subnational indices published.

As a result of the increase in areas to be sampled, it will be possible to publish monthly or quarterly indices for 28 cities compared with 25 at present. In addition, regional indices for cities of different population-size classes will be published for the first time.

Expanded population coverage will be accomplished by introducing a price index for all urban households in addition to the CPI which will continue to represent urban wage and clerical workers. Thus, the new index will cover approximately 80 percent of the noninstitutional population, compared with only 35-40 percent coverage by the CPI. This new index is being calculated and published in response to demands for a more comprehensive price index to measure inflation and guide monetary and fiscal policy.

Point of Purchase Survey

For the first time a "point-of-purchase" survey was undertaken to determine where urban wage and clerical workers shop. About 20,000 families were interviewed in 1974 to determine where they purchased various goods and services -- in retail stores, mail order houses, supermarkets, corner grocery stores, specialty shops, and so on. Also included were bowling alleys, repair shops, doctors' offices, etc. From the survey results, a full probability sample of retail stores and other outlets to be used in collecting the monthly price data was developed. An attempt was made to ensure that the number of outlets and the number of price quotations obtained in each were representative of the shopping patterns of urban wage and clerical workers.

Monthly Price Collection

The revised CPI program will include greater frequency with which prices are collected for the revised indices. A larger proportion of the items (by weight in the index) will be priced monthly, and a much smaller proportion priced quarterly. However, a substantial proportion of the items which could be priced monthly, representing as much as 25 to 30 percent of the market basket, will not be priced that frequently because of cost limitations.

One of the major pricing improvements undertaken in this revision program is the rent survey which will provide more accurate and current data for the rent index. The new procedure provides for a monthly rent collection, on a semi-annual rotation basis, and at each interview rent for both the current and previous month will be collected. Thus, it will be possible to compute month-to-month rent changes, rather than six-month changes as under the current system. In addition to providing more accurate short-term rent changes, the revised rent system will permit almost a 50 per cent reduction in the sample size.

The revised CPI and the new price index for all urban households will first be published in April 1977. These revised indices will represent a considerable improvement over the current program in terms of statistical techniques and data reliability. However, whether these improvements and innovations will make any practical difference in the size and movement of the CPI, and whether the CPI and the new index will differ, cannot be determined in advance. It is expected that the revised CPI and the new price index will move together very closely and indicate similar overall price changes. The next section considers the question of developing a special price index for the low-income population.

PRICE INDICES FOR THE LOW-INCOME POPULATION

Use of the CPI to update the poverty thresholds has been questioned because that index is targeted specifically to urban wage and clerical workers. As described in the preceding sections, the expenditure patterns of this group of consumers are used in determining the weighting scheme for the market basket and the specific items included in the market basket, and these consumers determine the sample of retail outlets and stores in which the items are priced. In a strict sense, therefore, the CPI is not representative of the inflation experience of the low-income population. The expenditures of the poor are more heavily weighted towards the basic necessities -- food and shelter -- and they shop in different stores. Moreover, at the very specific levels, the poor purchase different items, or at least items of lower quality, than moderate-income consumers. A similar objection has been raised with respect to the appropriateness of the CPI for updating pensions and Social Security benefits: the experience of the low-income elderly is not adequately captured by the CPI. Thus, there is some support for a family of price indices similar to the family of unemployment rates published by the Bureau of Labor Statistics.

A more basic objection might also be raised to the use of the CPI as an escalator for any purpose: it is not a measure of the cost of living; it is merely a price index. Thus, it does not capture the true changes in what it costs to maintain a given standard of living. The CPI does not take into account changes in consumption patterns resulting from quality changes, the introduction of new products, the response to shifts in the relative prices of commodities, or fashion changes. In addition, some important components of living costs, such as personal income taxes, are not included. The development of a true cost-of-living index may be currently unattainable as a practical excercise, however; this discussion will therefore focus on the narrower issue of the representiveness of the CPI for the low-income population. In this section the available empirical evidence bearing on the question is reviewed. The concluding section considers the feasibility of calculating and maintaining a separate price index for the poor.

One important point should be noted at the outset of this discussion. No theoretical basis exists for presuming that a price index for a special group of consumers will necessarily be higher or lower than the Consumer Price Index, nor even that it will diverge significantly from the CPI. The value and movement of each index depends on the relative prices of different goods and their weights in the respective indices. Knowing that the prices of necessities have risen faster than the prices of luxury goods, however, it would be possible to say that an index weighting necessities more heavily would indicate a larger average change in prices than an index more heavily weighting luxuries.

A full investigation of this question would require the calculation of a separate price index for each group of interest following the methodology described earlier in this technical paper. It would be necessary to derive a market basket which not only reflected the expenditure patterns of the group in the weights, but which was also comprised of specific items which were representative of the goods and services purchased by those consumers.

Then it would be necessary to conduct the subsequent pricing of those items in stores and other retail outlets where they shop. Data do not currently exist to conduct such an analysis, and any investigation is limited to the information available from the Consumer Price Index and related data sources.

Several studies of the distributional impact of inflation provide limited evidence of the effect of using the expenditure patterns of other groups of consumers to calculate different price indices. Each of these studies is based on expenditure data from the 1960-61 Survey of Consumer Expenditures 5/ and the published price indices for components of the Consumer Price Index. As a result, the calculated indices are not precisely comparable to the published CPI. The latter is calculated with fixed quantity weights, whereas the special indices use fixed expenditure weights since the price levels are not available. Another difference is that the CPI is based on 400 individual items while the special indices are limited to broad expenditure components, ranging from 12 to 52. Thus, the results of these studies, in addition to examining only one side of the question, are approximations to a true price index.

Hollister and Palmer 6/ undertook the first such study of the impact of inflation on the poor over the period 1947 to 1967. The basic groups distinguished were the poor, the near poor, and the wealthy. The poor were defined as those consumer units with both income and expenditures below the relevant poverty threshold of the official Federal measure; expenditures were included in this criterion to eliminate from the analysis temporarily poor households -- those living on assets. The near poor were those consumer units with income below 1.2 times their relevant poverty threshold and expenditures below 1.6 that level. Finally, those consumer units with an annual income over $10,000 (the top 15 percent of the income distribution in 1960) comprised the wealthy. The poor were further broken down into the aged, rural aged, rural nonaged, urban nonaged, urban white, and urban nonwhite. The expenditure weights for 12 broad categories for some of these groups are shown in Table 4. Both food and housing represent higher proportions for the poor, the aged poor, and the near poor than for urban wage and clerical workers or the wealthy. The aged poor spend disproportionately high proportions on housing and medical care.

Expenditures were disaggregated even further to calculate the price indices for the nine population subgroups from 1947 to 1967. These are shown in Table 5, along with the published CPI, for the years 1953 to 1967, with 1967 as the base year. Direct comparison of the calculated price indices with the published CPI prior to 1959 is complicated (biased) due to differences in weighting procedures. Over that period the CPI weights had shifted to take account of rising incomes, but the special price indices were calculated using fixed 1960-61 expenditure weights (a Paasche index). However, the general pattern that emerges is that the poor as a whole and the poor subgroups did not appear to experience greater effects of inflation than the wealthy or urban wage and clerical workers. There is no strong evidence that the price indices for these groups rose faster than for the nonpoor groups. This is shown by the fact that the value of the index is

Table 4. Expenditure Weights on Braod Components of Market Basket for Selected Population Groups, 1960-61

Expenditure Category	Expenditure as a Proportion of Total Expenditures for: Urban Wage and Clerical Workers	Poor	Aged Poor	Near Poor	Wealthy
Food	.224	.349	.344	.317	.219
Alcoholic Beverages	.026	.007	.004	.010	.018
Tobacco	.019	.023	.016	.021	.013
Housing	.332	.356	.422	.339	.278
Clothing	.106	.078	.036	.087	.118
Transportation	.139	.051	.033	.074	.160
Medical	.057	.058	.086	.066	.062
Personal Care	.028	.033	.025	.032	.027
Recreation	.044	.023	.013	.027	.048
Reading	--	.008	.011	.008	.009
Education	--	.003	.0003	.005	.020
Miscellaneous	.009	.011	.010	.014	.029

SOURCE: Robinson G. Hollister and John L. Palmer, "The Impact of Inflation on the Poor and the Implicit Tax of Inflation and Unemployment: Some Implications," in Kenneth E. Boulding and Martin Pfaff, ed., Redistribution to the Rich and Poor: The Grants Economics of Income Distribution, (Belmont, California: Wadsworth Publishing Co., 1972), p. 245.

lowest for the wealthy and the CPI in the earlier years. In 1960 the CPI was 88.7 and the price index for the wealthy was 88.4, compared with 89.7 for the overall price index for the poor.

A different conclusion was reached when two subsequent studies 7/ updated these results to the more recent period. In each case, only the indices for the wealthy and the poor were calculated, and the 12 broad expenditure categories were used rather than the finer detail of the original Hollister-Palmer study. These results, for 1967 through the first six months of 1975, 8/ are reported in Table 5; selected indices for the period 1960-1975 are graphed in Figure 2, and the annual per centage increase in each of these indices is graphed in Figure 3. The similarity of movement of the indices continued from 1967 through 1972; after that point, however, a persistent differential appeared and widened as the price index for the poor steadily rose faster than either the CPI or the price index for the wealthy. By mid-1975 the differential had widened to 5.1 percentage points, from 2.8 percentage points in 1973. These changes coincided with the period of rapid inflation when food and housing prices led the increases. This sharp change in relative prices is illustrated in Figures 4 and 5. Note that the movement of the CPI includes the effect of the food and housing prices and, therefore, overstates the rise in other prices.

A similar effect is observed in a price index calculated for the low-income retired 9/ shown in the final column of Table 5. Based on the 1960-61 expenditure patterns of the consumer units with a retired head and family income between $2,000 and $3,000, a price index was calculated for 12 broad budget components. As shown in Table 6, these expenditure

Table 5. Comparison of Consumer Price Index with Price Indexes for Special Groups, 1953-1975

Year	Consumer Price Index	Price Index for: All Poor	Aged Poor	Rural Non-Aged Poor	Rural Aged Poor	Urban Non-Aged Poor	Urban White Poor	Urban Non-White Poor	Wealthy	Low-Income Retired
1953	80.1	81.8	82.1	82.2	83.4	81.7	81.3	82.1		
1954	80.5	82.2	82.7	82.2	83.5	82.1	81.8	82.5		
1955	80.2	82.0	82.8	81.8	83.3	81.9	81.6	82.3		
1956	81.4	83.2	83.9	82.8	84.4	82.9	82.8	83.5	80.0	
1957	84.3	85.6	86.3	85.4	87.1	85.4	85.3	85.8	--	
1958	86.6	88.0	88.7	87.9	89.7	87.7	87.6	88.1	86.0	
1959	87.3	88.4	89.2	88.4	90.1	88.1	88.2	88.5	--	
1960	88.7	89.7	90.5	89.5	91.4	89.5	89.6	89.9	88.4	88.3
1961	89.6	90.6	91.5	90.3	92.3	90.3	90.3	90.7	--	89.3
1962	90.6	91.5	92.2	91.2	93.0	91.3	91.2	91.5	--	90.3
1963	91.7	92.8	93.4	92.4	94.1	92.5	92.4	92.7	--	91.5
1964	92.9	93.7	94.4	93.4	95.2	93.5	93.5	93.7	93.1	92.7
1965	94.5	95.1	95.9	94.9	96.6	94.9	95.0	95.1	94.5	94.2
1966	97.2	98.1	98.5[a]	97.8	98.9[a]	97.8	97.8	98.0	97.3	97.3
1967	100.0	100.0	100.0[a]	100.0	100.0[a]	100.0	100.0	100.0	100.0	100.0
1968	104.2	104.2	--	--	--	--	--	--	104.2	104.2
1969	109.8	110.0	--	--	--	--	--	--	109.7	109.9
1970	116.3	116.6	--	--	--	--	--	--	116.1	116.5
1971	121.3	121.3	--	--	--	--	--	--	121.0	121.5
1972	125.3	125.7	--	--	--	--	--	--	124.9	125.3
1973	133.1	135.3	--	--	--	--	--	--	132.5	134.7
1974	147.7	151.3[b]	152.1[a,b]	--	--	--	--	--	147.0[b]	150.5
1975[c]	158.3	162.3[b]	163.5[a,b]						157.2[b]	161.8[b]

SOURCE: Monthly Labor Review (August 1975), Tables 22 and 23 for Consumer Price Index.

Unpublished study by the Social Security Administration for the price index for the low-income retired.

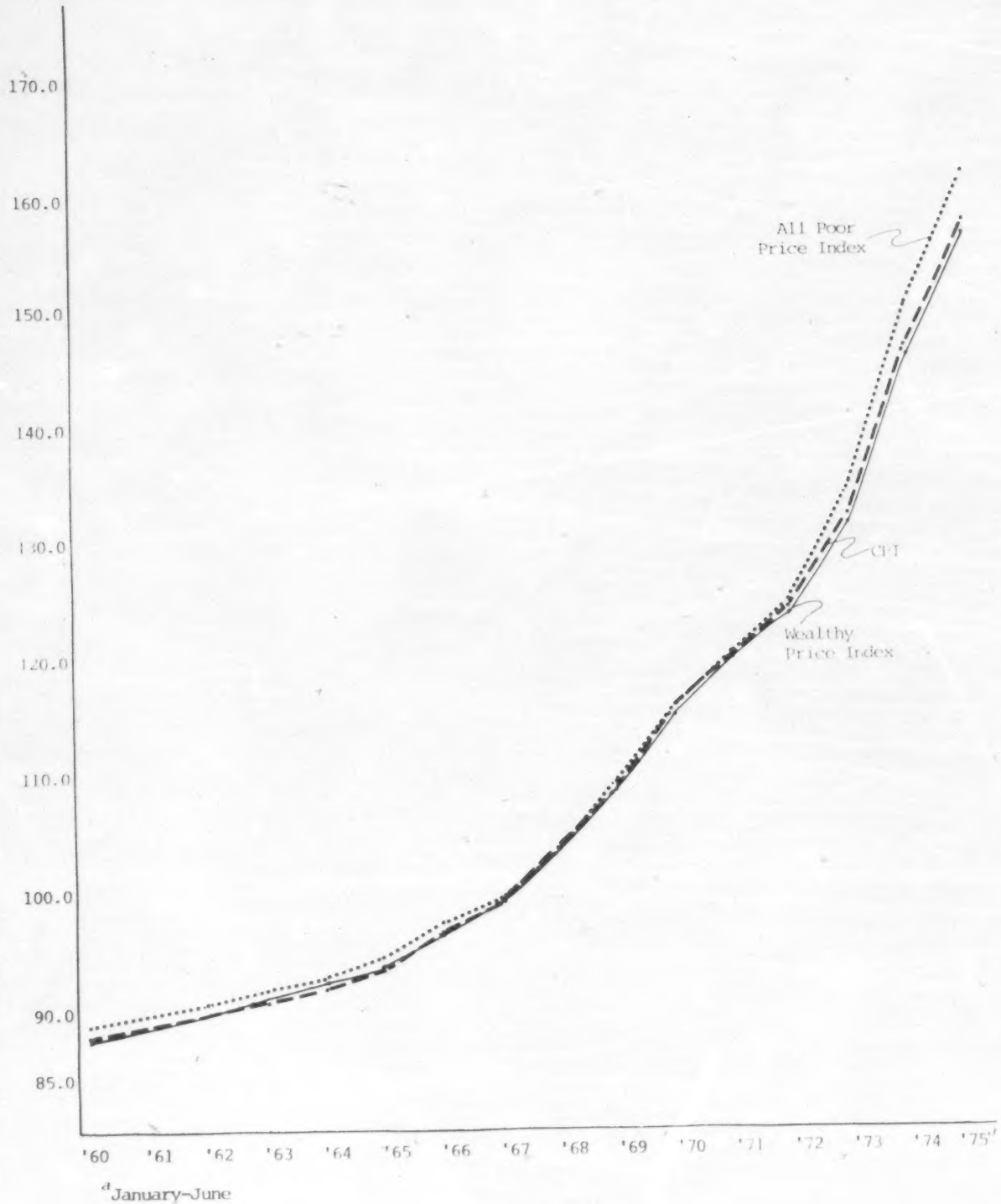
Robinson G. Hollister and John L. Palmer, "The Impact of Inflation on the Poor and the Implicit Tax of Inflation and Unemployment: Some Policy Implications," in Kenneth E. Boulding and Martin Pfaff, ed., Redistribution to the Rich and Poor: The Grants Economics of Income Distribution (Belmont, California: Wadsworth Publishing Co., 1972), Tables 4 and 5 for the other price indexes, 1953 to 1967.

John L. Palmer and Michael C. Barth, "The Impacts of Inflation and Unemployment: With Emphasis on the Lower Income Population," Technical Analysis Paper No. 2, Office of Income Security Policy, Office of the Assistant Secretary for Planning and Evaluation, Department of Health, Education, and Welfare (October 1974), Table 2, for the price index for all poor and for wealthy, 1967 to 1973.

[a] Adjusted for Medicare.

[b] Calculated from expenditure weights reported in above sources and component price indexes in Monthly Labor Review (August 1975), Table 23.

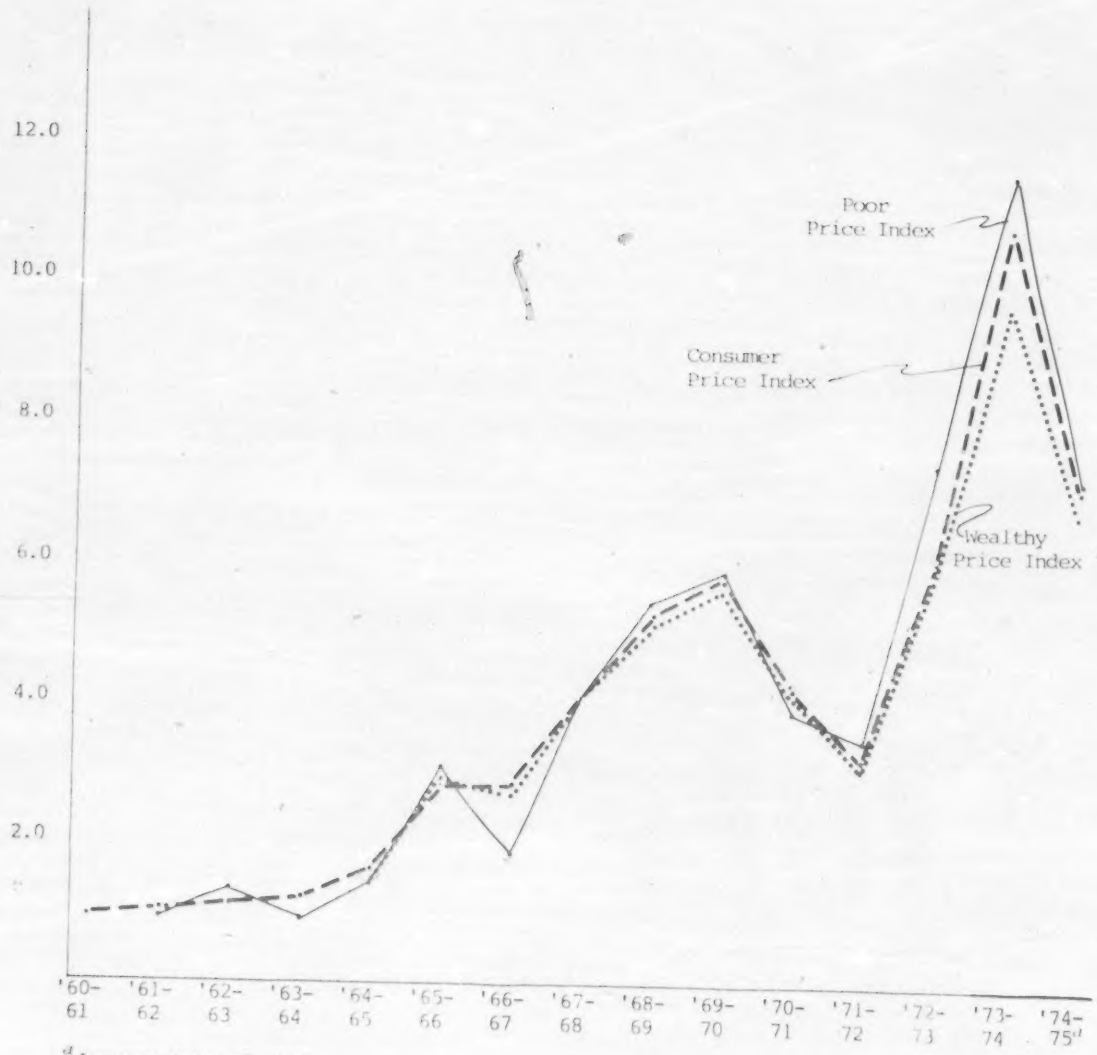
[c] Average for January-June 1975.



[a]January-June

SOURCE: Table 5.

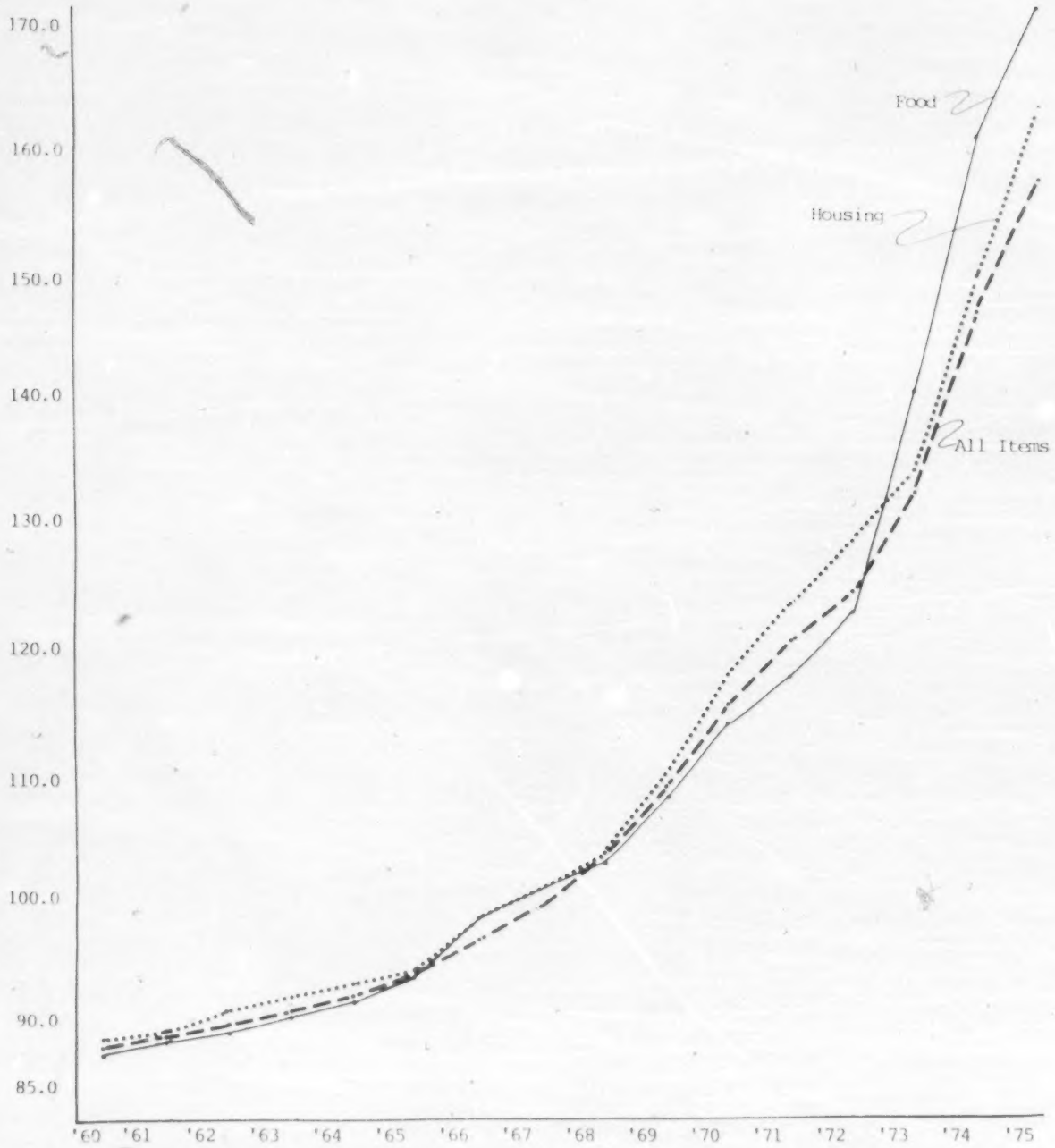
Figure 2. Consumer Price Index and Price Indices for the Poor and for the Wealthy, 1960-1975



[a]January-June of 1975

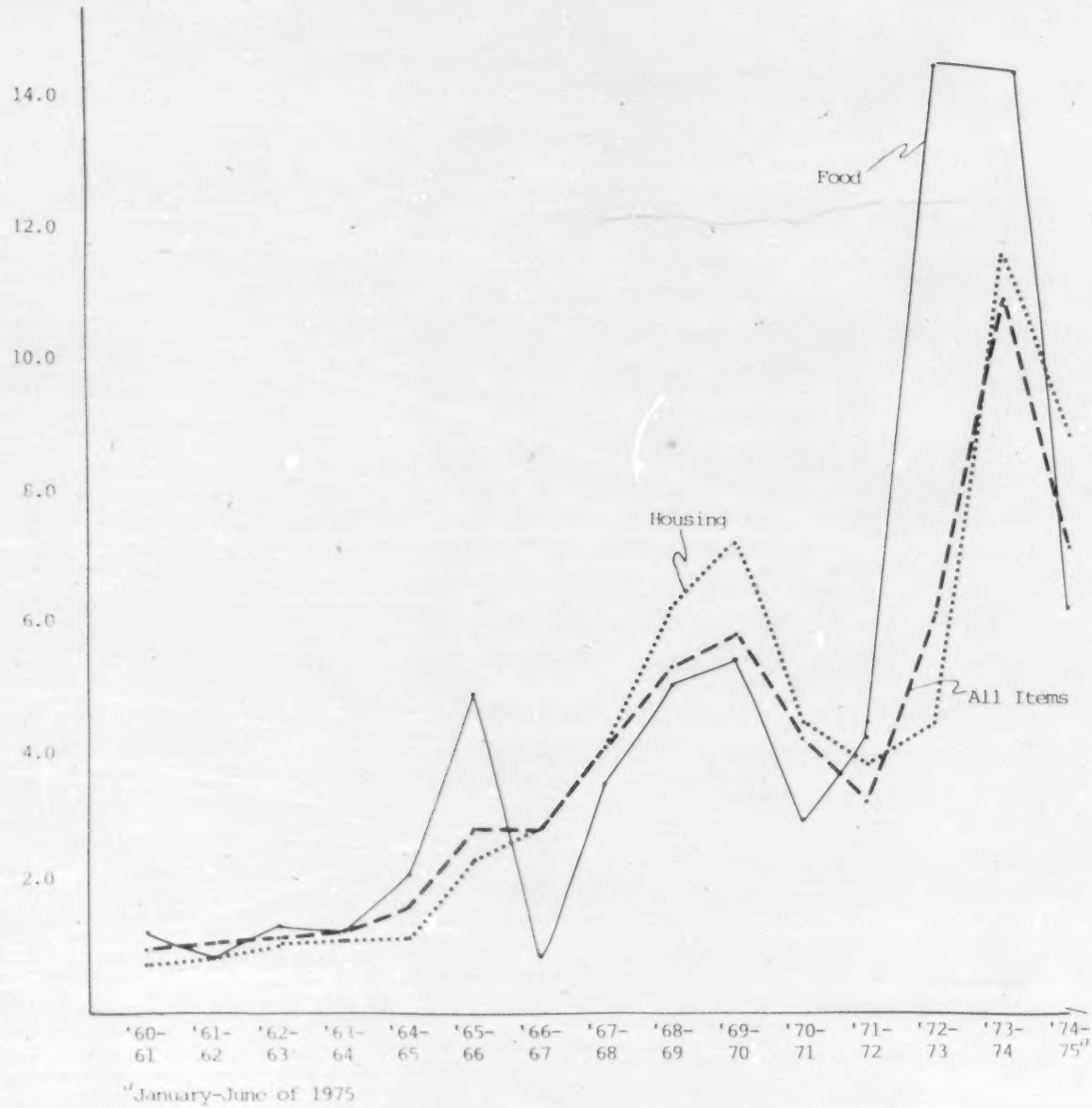
SOURCE: Table 5

Figure 3. Annual Percentage Increase in Consumer Price Index and Price Indices for the Wealthy and for the Poor



SOURCE: U.S. Department of Labor, Bureau of Labor Statistics, Handbook of Labor Statistics 1974, Bulletin 1825, Washington, U.S. Government Printing Office, 1974, Table 121, p. 302, and Monthly Labor Review (August 1975), Table 23, p. 85.

Figure 4. Consumer Price Index and Food and Housing Components, 1960-1975



SOURCE: U.S. Department of Labor, Bureau of Labor Statistics, Handbook of Labor Statistics 1974, Bulletin 1825, Washington, U.S. Government Printing Office, 1974, Table 121, p. 302, and Monthly Labor Review (August 1975), Table 23, p. 85.

Figure 5. Annual Percentage Increase in Consumer Price Index and Component Price Indices for Food and for Housing

patterns differ from those of urban wage and clerical workers, and comparison with Table 4 reveals some differences between the expenditure patterns of the low-income retired and the aged poor.

Without trying to belabor a point, the BLS family budgets 10/ provide further evidence of the effect of reweighting a market basket for a given set of price increases (represented by the component price series of the CPI). Under this program BLS periodically updates the annual cost for an urban family of four of a budget at three levels of living -- low, intermediate, and high by applying changes in the CPI to previous years' costs at a disaggregated level. The budgets are specified partly on the basis of need, partly on the basis of expenditure relationships observed in the 1960-61 Survey of Consumer Expenditures, and partly on the basis of judgments by BLS staff. The composition of the three budgets, therefore, differs from the CPI market basket. Correspondingly, the percentage increases in the budgets do not usually agree with the average price increase indicated by the CPI. Moreover, in the recent period of inflation, the low family budget, which weights more heavily food and shelter, has increased at a faster rate than the moderate or high family budgets.

Each of these studies has based the expenditure weights for the market basket on various subgroups of the population and calculated the special index directly. A recent study by Michael 11/ took a different approach and calculated a price index for individual consumer units and then combined them into subgroups. Following an otherwise similar methodology to the previous studies, Michael used the expenditure data for nearly 12,000 households in the 1960-61 Survey of Consumer Expenditures sample and the published CPI component price indices for 52 expenditure categories to compute the individual price indices at selected points over the period 1967 to 1974.

Considerable dispersion among households was observed in these individual price indices. For example, for the first six months of 1974, the range of increase was from 2.0 percent to 13.0 percent, with an average of 6.0 percent. Ten percent of the families experienced increases below 4.6 percent and 10 percent experienced increases above 7.4 percent. The implication of this wide dispersion is that use of an average price index as an escalator (or an adjustment for inflation) for all consumers would considerably overcompensate some families and considerably undercompensate others. When families were combined into homogeneous subgroups by such characteristics as age, income, marital status, and education, the dispersion of the individual price indices within any group remained considerable. Moreover, the within-group dispersion tended to dominate the between-group differences. In other words, although the average price index for high-income families differed from the average price index for low-income families, the index for a particular low-income family might be closer to the average index for high-income families than to the average for low-income families.

Table 6. Expenditure Weights on Broad Components in Market Basket for Low-Income Retired and Urban Wage and Clerical Workers, 1960-61

Expenditure Category	Expenditure as a Proportion of Total Expenditures for: Low-Income a/ Retired	Urban Wage and Clerical Workers
Food	.290	.224
Alcohol	.014	.026
Tobacco	.016	.019
Shelter	.190	.201
Utilities	.077	.053
Household operations	.091	.078
Apparel and upkeep	.055	.106
Transportation	.069	.139
Medical	.119	.057
Personal care	.027	.028
Reading and recreation	.032	.059
Miscellaneous	.020	.009

SOURCE: Unpublished study by the Social Security Administration.

a/Families with a retired head and income between $2,000 and $3,000 in 1960-61.

One possible reason for the observed high variance in individually calculated price indices is the fact that they become more sensitive to unusual large purchases incurred during the year. Although households purchasing a home during the survey year were omitted from the analysis, purchase of expensive durable goods such as a major appliance or an automobile could unduly affect the weights for those particular families and, thus, could cause their price index to deviate from the average. Some support for this conjecture is borne out by the relatively large coefficients of variation for the expenditure weights on furniture, automobiles, and appliances. 12/ However, other items reflecting legitimate annual differences in tastes or needs -- music lessons, medical appliances, alcoholic beverages, hospitalized illness -- also exhibited considerable variation. Therefore, the widespread dispersion of the individual price indices reflects variations in household preferences.

This finding has an important implication for the rationale of calculating special price indices for different population subgroups. Although not conclusive, the evidence does suggest that use of special price indices for "homogeneous" subgroups of the population will not necessarily be more equitable than use of the CPI, or the forthcoming broader price index for urban households, for updating. Calculating a special price index may more accurately approximate the average experience of the subgroup, but the individual experience of families within the group is no better approximated because of the wide variation in preferences and needs even within a presumed homogeneous group.

The partial and fragmentary nature of the empirical evidence reviewed in this section cannot be emphasized too strongly. Each study was able to examine only one aspect of the question, the effect of altering the weights in the index calculation, and even that was done in an incomplete fashion. The expenditure categories were very broad: 52 categories were the finest level of detail, and food was never broken down beyond food-at-home and food-away-from-home. The price movements used were not specific to the population subgroups studied, but instead related to the goods and services purchased by urban wage and clerical workers in stores frequented by those consumers. Thus, these studies effectively assumed that although the poor spent a higher proportion of their budget on food, the composition of those food expenditures was the same as for urban wage and clerical workers. In an argument analogous to that developed for the construction of separate price indices, these food patterns are not applicable to the poor who consume a diet more heavily weighted to starches than to meats and to hamburger and chicken than to veal and T-bone steak. The importance of such disaggregation of the market basket should not be underemphasized. Hollister and Palmer found sizeable differences between preliminary estimates of the price index for the poor using 12 componenets and the final estimates using more detailed components. However, the direction of the impact of greater disaggregation is not predictable.

CONCLUSIONS

This final section considers the case for a price index for the poor, taking into account the theoretical arguments, the empirical evidence, and the likely cost. The conclusion reached is that at this point the high cost of the construction of such an index outweighs its apparent usefulness, and recommendation for a price index for the poor cannot be made.

The primary argument advanced in favor of constructing a price index for the poor is that it would reflect the inflation experience of the poor, and, therefore, would be a more equitable measure by which to update the income thresholds of the poverty measure. Although there is no theoretical basis for presuming that the index will necessarily diverge from the CPI, the recent rapid rise in the prices of food, shelter, and utilities has heightened concern that the CPI understates the effect of inflation on the poor because a greater proportion of their expenditures are for these necessities. Limited empirical evidence reviewed in the preceding section tends to support this conjecture.

The data necessary for constructing such a price index, comparable to the CPI, are not currently available. To obtain the data would require a replication of the procedure described in the first two sections of this paper. First, it would be necessary to establish the appropriate market basket of goods and services for the low-income population. This would involve both the determination of the expenditure weights and the selection of specific items to represent the entire range of purchases of the poor from a consumer expenditure survey. Second, a point of purchase survey would be necessary to determine the retail outlets, repair shops, service establishments, and so on where low-income consumers shop. The results of this survey

would reflect the geographic distribution of the poor as well as their different shopping patterns. Finally, in a continuing program, the specific items selected would be priced each month in those stores. While it would be technically feasible to undertake such an innovation, the cost would be substantial.

Development of the basic price index would be comparable to the CPI revision program currently under way at BLS to revise the CPI market basket. The cost of this program has been estimated at $40 million. 13/ Although this cost includes the development of the price index for all urban households, much of this work was complementary with the CPI revision. For the "poor price index," an additional consumer expenditure survey would be necessary because the 1972-73 CEX sample may not contain a sufficient number of low-income households to develop a market basket with an acceptable level of statistical reliability. The 1972-73 CEX cost approximately $16 million but, due to a trade-off in efficiencies and rising costs, it is not possible to specify what the cost would be to conduct such a survey at this time. The point-of-purchase survey completed in 1974 for the CPI revision cost $1.7 million; such a survey might also have to be undertaken for the low-income population. Currently the CPI monthly pricing program costs about $4 million annually. Presumably, however, the pricing program required to maintain a monthly price index for the poor could be combined with the CPI pricing program, and the resulting efficiencies might lead to less than a doubling of the cost. If this methodology were followed, the price index constructed for the poor would have similar geographic coverage to the revised CPI and would not be available on a comprehensive basis for all areas of the nation.

To be weighed against this substantial construction cost are the limitations and problems inherent in such a special price index. One important consideration is the fact that the Consumer Price Index, or a similarly constructed price index, contains a number of theoretical and practical compromises. Theoretically, a price index is an approximation adopted out of necessity for a cost-of-living index, and measures only the average change in prices of a fixed market basket of goods and services. This general limitation of price indices is discussed more fully earlier in this paper in the context of the limitations of the CPI. Some have argued, however, that a price index is a more adequate indicator of the cost of living for the poor because these consumers have much less flexibility in their expenditures and are unable to substitute alternative products when relative prices shift because they had already taken full advantage of cost differentials. 14/

At the empirical level a price index will also contain many approximations. For example, a sample of items is priced to represent the movement of all prices, and only a limited number of price quotations is obtained. Other examples are apparent throughout the description of the construction of the CPI. Furthermore, the market basket is out of date by the time it is introduced into the index: the revised CPI, appearing in 1977, will be based on 1972-73 expenditure data, which will be almost five years old. With the passage of time, that market basket becomes less and less representative

of the actual expenditures of consumers, and, in spite of procedures employed by the BLS, the items priced may become less representative of the quality and range of products purchased. Given the imprecise nature of a price index, both theoretically and empirically, the additional precision sought in a separate index for a special group seems illusory.

The practical importance of some of the suggested refinements is also questionable. Although a separate pricing survey for the poor may reveal that they pay different prices from urban wage and clerical workers for similar commodities, the magnitude of the impact on the special price index is unclear. The index measures changes in prices and, therefore, such differentials in price levels are not important. All prices are rising, and the question hinges on whether the prices paid by the poor rise at a faster or slower rate. Wide differentials in the rate of price increase between different stores are unlikely, 15/ but this remains an unresolved empirical issue.

Finally, the results of one study, although incomplete and therefore tentative, strongly suggest that the assumption underlying the argument for special price indices is not well founded in fact. This study demonstrated that the expenditure patterns of presumably homogeneous subgroups of consumers are not necessarily more similar than the expenditure patterns for all consumers. As a result, the assumption that the inflation experience of individual poor families is more adequately captured by a "poor price index" than by an overall price index is questionable. On the other hand, some might argue that this finding suggests that the subgroups should be more narrowly defined, such as the urban aged poor and the rural nonwhite poor with children, to reduce the variability in needs and preferences. Although further investigation of the homogeneity and variability of expenditures is probably warranted, the large family of price indices implied by this line of reasoning would be prohibitively expensive to develop and maintain.

On balance, the argument in favor of constructing a price index for the poor is weak. The empirical gains in "accuracy" seems limited, and the cost would be very high. Moreover, some doubt has been cast on the validity of the basic assumption for such a construction. However, the available empirical evidence reviewed is fragmentary, and some of the arguments are based on conjecture in the absence of data to resolve the issues. Clearly, further research is necessary before a definite conclusion recommending or rejecting the construction of a price index for the poor is warranted. One issue which might be explored is the feasibility of maintaining a price index for the poor which is based on a simplification of the CPI methodology, but which is adequate to capture the effect of fairly large shifts in relative prices for important expenditure categories such as food and shelter.

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FOOTNOTES TO TECHNICAL PAPER V

1. The choice is arbitrary and could be changed by dividing the series by the value of the index in the new period selected as the base.

2. The other major type of index, the Paasche index, uses constant current period weights, and for obvious reasons, is impractical for the construction of a monthly price index.

3. Julius Shiskin, "Updating the Consumer Price Index--An Overview," Monthly Labor Review (July 1974), p. 3.

4. Shiskin, "Updating the Consumer Price Index," p. 3.

5. Only preliminary results have been released from the 1972-73 Consumer Expenditure Survey, and these do not provide information on a complete set of expenditures. Therefore, it is not possible to examine the impact of more current expenditure weights on the different price indices.

6. Robinson G. Hollister and John L. Palmer, "The Impact of Inflation on the Poor and the Implicit Tax of Inflation and Unemployment: Some Policy Implications," in Kenneth E. Boulding and Martin Pfaff, ed., Redistribution to the Rich and the Poor: The Grants Economics of Income Distribution (Belmont, Cal.: Wadsworth Publishing Company, 1972).

7. Thad W. Mirer, "The Distributional Impact of Inflation and Anti-Inflation Policy," Discussion Paper 231-74, Institute for Research on Poverty, University of Wisconsin, October 1974; and John L. Palmer and Michael C. Barth, "The Impacts of Inflation and Unemployment: With Emphasis on the Lower Income Population," Technical Analysis Paper No. 2, Office of Income Security Policy, Office of the Assistant Secretary for Planning and Evaluation, Department of Health, Education, and Welfare, October 1974.

8. The present study extended the results from mid-1974 through mid-1975.

9. This index was calculated in an unpublished study by the Social Security Administration.

10. This BLS program is described fully in Technical Paper IV.

11. Robert T. Michael, "Variation across Households in the Rate of Inflation," NBER Working Paper No. 74, Center for Economic Analysis of Human Behavior and Social Institutions, National Bureau of Economic Research, Stanford, Cal., March 1975.

12. Michael, "Variation across Households in the Rate of Inflation," appendix Table A-2.

13. Shiskin, "Updating the Consumer Price Index," p. 19.

14. Mirer, "The Distributional Impact of Inflation and Anti-Inflation Policy," p. 7.

15. This is a separate issue from that of the precise items included in the market basket to be priced, but even in this case the fact that all prices are rising will mute any impact on the different indices.

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